STATE WEATHER SERVICES.

The following extracts are republished from reports for May, 1888, of the directors of the various state weather services:

The "Alabama Weather Service," P. H. Mell, jr., of the Agricultural and Mechanical College, Auburn, director:

The average temperature for this month was 2°.9 below the normal. A number of cool days occurred about the middle of the month, especially in the northern half of the state. These cool periods were pleasant and not injurious to the growing crops. There was a slight deficiency of rain; but the showers were generally distributed over the state. The precipitation was 0.44 of an inch below the normal. No violent storms were reported from any quarter. The farming operations have made favorable progress and the outlook is generally encouraging.

Summary.

Temperature (in degrees Fahr.).—Monthly mean, 70.4; highest monthly mean, 76.6, at Evergreen; lowest monthly mean, 62.8, at New Market; maximum, 96, at Opelika, on the 27th, at Newton, on the 28th, at Evergreen and Greenville, on the 30th; minimum, 35, at Gadsden, on the 15th; range for state, 61; greatest local monthly range, 59, at Gadsden; least local monthly range, 31, at Mobile.

Precipitation (in inches).—Average for the state, 3.94; greatest, 8.71, at Valley Head; least, 0.13, at Pineapple.

Wind.—Prevailing direction, southwest.

The "Arkansas Weather Service," report prepared by W. U. Simons, Signal Corps, Little Rock:

Temperature (in degrees Fahr.).—Monthly mean, 69.3; highest monthly means, 75.7, at Brinkley and Dallas; lowest monthly mean, 62.9, at Conway; maximum, 98.5, at Wellbourne, on on the 26th; minimum, 32, at Monticello, on the 1st; monthly range for state 66.5; greatest local monthly range, 62.0, at Wellbourne; least local monthly range, 26, at Dayton.

Precipitation (in inches).—Average for state, 4.83; greatest 10.10, at Dallas; least, 0.10, at Brinkley.

The "Colorado Weather Service," Prof. F. H. Loud, Colorado Springs, director:

Summary.

Temperature (in degrees Fahr.).—Monthly mean, 48.3; highest monthly mean, 60.6, at Trinidad; lowest monthly mean, 21.3, at Pike's Peak; maximum, 91.7 at Glenwood Springs, on 15th; minimum, 6.7, at Pike's Peak, on the 3d; range for state, 85.0; greatest local monthly range, 55.0 at Glenwood Springs; least local monthly range, 5.1 at Pike's Peak; greatest daily range, 55.0, at Glenwood Springs, on the 15th; least daily range, 2.0 on the 4th, at Climax.

Precipitation, including melted snow (in inches).—Average for state, 2.38; greatest, 5.81, at Julesburg; least, 0.17, at Grand Junction.

Wind.—Prevailing direction, west.

The following is an extract from the May crop report of "Georgia Agricultural Department," Hon. J. T. Henderson, Commissioner:

The drought which set in after the heavy rains of March and the early part of April was brought to a close by copious rains which fell, varying in the different sections of the state, from the 12th to the 22d of May. The season continued good until June 1, many correspondents complaining of too much rain, which interfered with the proper cultivation of crops.

The temperature throughout the greater part of May was rather too low for the healthy development of the cotton plant, and this circumstance, together with the too-abundant rains, has had a somewhat retarding effect on the crop. The seasons and temperature on the first day of June were all that could be desired in every section of the state.

The "Monthly Review of the Illinois Weather Service," Col. Charles F. Mills, Springfield, director:

The temperature was below the average for all parts of the state. There were occasional frosts, one quite severe on the 14th, but no serious damage was done.

The rainfall was the heaviest we have had for several years in the northern and central divisions, but was much less in the southern division than either of the other two. Very heavy rains occurred in many parts of the state, and thunder-storms were very numerous.

The deficiency of the present year continued until the 26th, when it was converted into a surplus in the northern and central divisions of the state, and in some counties of the southern division; but in most of the southern counties the deficiency still continues and considerable more rain is needed.

The following figures will show, in some measure, the unequal distribution of the rainfall during the month. In Chicago the total rainfall was 6.22 inches, which was 2.72 inches above the average for sixteen years, and this amount has only twice been exceeded in that period. At Springfield the total was 8.61 inches, which was 3.88 inches above the average of the past nine years, and has only once been exceeded in amount during that time—in 1882, when it was 10.59 inches. At Peoria it was 2.92 inches above the average of thirty-two years, the total amount for the month being 6.73 inches. At Pekin it was 3.82 inches above the average of six years, the total being 8.71 inches. At Cairo, however, it was different, the rainfall there being being only 3.58 inches, which is 0.37 of an inch below the average of the sixteen previous years. The same condition of things prevailed at Saint Louis, where but 3.31 inches fell, which was 0.24 of an inch below the average of sixteen years.

Several small tornadoes occurred during the month, but fortunately did little damage. One passed east of Freeport on the evening of the 10th, which tore down fences and unroofed some buildings, while the observer at Dwight reports that a large waterspout or funnel-shaped cloud passed eleven miles southwest of that station on the 11th, but did no damage.

The "Indiana Weather Service," Prof. H. A. Huston, of Purdue University, Lafayette, director:

The temperature during the month was cool throughout; the mean temperature was 3° below the normal. The highest temperature occurred on the 11th and 27th nearly everywhere, and the lowest on the 1st and 2d in the northern portion, and on the 15th in the central and southern portions of the state; the latter was accompanied by hoar-frost, and also in several localities by thin ice. The changes from a higher to a lower temperature were only gradual, while sudden changes from a lower to a higher occurred on the 10th and 27th. Light hoar-frosts were quite frequent, but probably did no great injury to vegetation in general.

There fell, during the month, abundant rains in the central and southern portions, but only in few localities in the northern. Very heavy rains fell during the thunder-storms of the 27th and 28th. These thunder-storms were noteworthy, besides their heavy rainfall, by a very energetic and vivid electrical display, and by the absence of violent winds, which only were noted at a few places during the thunder-storms of the 4th, 7th, and 8th.

Although the well distributed and much needed rainfall was sufficient and beneficial to vegetation in general and to crops and pasturage particularly, still the prevalence of cool temperature and frequently obscured sky acted adversely to the maturing and growth of the various crops, and at the end of the month they are not so well advanced and promising as usual.

Summary.

Temperature (in degrees Fahr.).—Monthly mean, 60.5; highest monthly mean, 65.8, at Mount Vernon; lowest monthly mean, 55.4, at La Grange; maximum, 91.0, at Princeton, Butlerville, and Fortville, on the 6th, 11th and 27th; the minimum, 28.0, at Richmond, on the 15th; range for state, 50.0; greatest local monthly range, 62.0, at Fortville; least local monthly range, 42.0, at Seymour, Brookville, Connersville and Farmland.

Precipitation, including melted snow (in inches).—Average for the state, 4.04; greatest, 7.79, at Columbia City; least, 1.50, at Marion.

Wind.—Prevailing direction, southwest.

The "Kansas Weather Service," Prof. J. T. Lovewell, Topeka, director:

The mean temperature for the state is below the May average, and the deficiency is most marked in the northeast counties, where it amounts to 4° and upwards. It is less marked in the central-southern counties, being but 1°.2 below the average in Sumner county, but the deficiency increases from here west, and is 2°.6 in Ford county. The average temperature for the eastern division is 63°, for the middle division 63°, and for the western division 59°; average for the state 62°; the average maximum temperature was 88°; average minimum 39°. The temperature conditions were uniform in the middle and eastern divisions, but ranged slightly lower in the western division; the average highest and lowest temperatures being a degree lower, and the mean being four degrees lower than in the other divisions.

The average rainfall for the state was 3.34 inches; for the eastern division it was 3.50; for the middle division, 3.20; and for the western division, 3.03. Of the total amount falling in the state the eastern division received 36 per cent., the middle division 33, and the western 31 per cent. In Wyandotte county there was an average rainfall which extends through Jefferson, Jackson, Pottawatomie, Riley, and Washington counties, while the counties north and east of these received an excess. The counties north of the Smoky Hill River and west of Mitchell and Jewell generally received an average rainfall, as did also the southern tier from Sumner to Cherokee. Throughout the rest of the state a deficiency exists, which is greatest in Shawnee, Wabaunsee, and Morris.

Summary.

Temperature (in degrees Fahr.).—Monthly mean for the state, 62; highest monthly mean, 68, at Grenola; lowest monthly mean, 56, at Eureka; maximum, 94, at Dorrance. Ninnescah, McAllister, and Montero, on the 2d, 20th, and 21st; minimum, 30, at Topeka and Jacksonia, on the 18th and 19th; range for state, 64; greatest local monthly range, 59, at Jacksonia; least local monthly range, 41, at Cawker City; greatest daily range, 55, at McAllister, on the 1st; least daily range, 1, on the 23d, at Waterville.

Precipitation, including melted snow (in inches).—Average for the state, 3.24; greatest, 7.70, at Leavenworth; least, .87, at Topeka.

Wind.—Prevailing direction, south.

The "Louisiana State Weather Service," in charge of R. E. Kerkam, Sergeant, Signal Corps, at New Orleans:

Temperature (in degrees Fahr.).—The mean temperature for May, 1888, for the state of Louisiana was 73°.3, which was 0°.5 below the May normal of past eighteen years. In the northern section of the state, the average temperature for the month was about the normal for that section, the deficiency of one degree occurring in the southern section.

Precipitation (in inches).—The average rainfall for May, 1888, for the state, 5.49, was an excess of 0.31, compared with a May normal of past eighteen years, in which period the May averages were as follows: 1871, 5.08; 1872, 8.49; 1873, 10.68; 1874, 0.52; 1875, 1.71; 1876, 7.60; 1877, 1.48; 1878, 6.02; 1879, 5,57; 1880, 5.29; 1881, 4.37; 1882, 6.57; 1883, 2.84; 1884, 10.85; 1885, 4.14; 1886, 1.37; 1887, 5.16; 1888, 5.49.—Average 5.18. There was an average deficiency of 0.15 in the northern section of the state, the May normal for that section being 4.95. In the southern section there was an average excess of one-half inch, the May normal being 5.58. The heaviest May rainfall on record for north Louisiana is 11.97, in 1884, and in south Louisiana, 18.68 in 1873. The heaviest rainfalls reported during the past month are as follows: Sugar Experiment Station, near Kenner, 11.71; New Orleans, 9.75; Alexandria, 9.25.

Wind.—The prevailing direction for the state was south; for the northern section, south; and for the southern section, southeast.

The "Michigan Weather Service," N. B. Conger, Sergeant, Signal Corps, Lansing, director:

Temperature (in degrees Fahr.).—The mean temperature for May, 52.2 is 4.4 below the normal of thirteen years. The temperature was below the normal in all sections during May. The greatest deviation, 4.8, was for the Upper Peninsula, and the least was 3.1 below the normal in the southern section. The mean daily temperature was below the normal on 21 days and above on nine days. The highest mean daily temperature, 65, occurred on the 11th and 24th, when the temperature was 10 and 4, respectively, above the normal, and the lowest 37, occurred on the 1st and 13th, when the temperature was 11 and 21, respectively, below the normal. The highest mean daily temperature for the past thirteen years, 75, occurred on the 25th, 1880, and the lowest, 36, occurred on the 1st, 1877. The highest mean monthly temperature, 63.7, occurred in 1880, and the lowest, 51.3, occurred in 1882. The maximum temperature, 88, occurred at Corunna on the 22d, and at Hart on the 24th, and the lowest, 18.0, occurred at Hart on the 1st. The mean monthly temperature is but 0.9 above the lowest monthly temperature in the past thirteen years, The mean temperature in 1882 was 51.3, in 1883, 51.5.

Precipitation, including melted snow (in inches).—The average amount of precipitation for May, 3.51, is 0.11 above the normal of thirteen years. The precipitation was below the normal in the northern and southern sections, and above in the Upper Peninsula and central section. The precipitation is in excess in the central counties of the central section, Marshall showing an excess for May of 2.43 from an eight years' normal, while at Lansing there is an excess of 0.23. The greatest deficiency occurs in the southeastern part of the state, the deficiency at Detroit being 1.62, and at Adrian 1.20. Stations on the east and west borders of the state show a deficiency for May of from 0.31 at Grand Haven, to 0.86 at Port Huron. The largest monthly rainfall, 6.15, was recorded at Colon, Saint Joseph Co., and the least, 1.80, at West Branch, Ogemaw Co. General rains occurred on the 7th, 8th, 12th, 18th, 26th, 27th, 28th, and 31st. Heavy rainfall was recorded on the 12th, 27th, and 28th. Twenty-two stations record a rainfall of 1.00 inch or more on the 28th, and at Berrien Springs, Berrien Co., there was recorded 3.04 that fell on the 27th and 28th. Comparing the total rainfall for this month with the records of twelve years, it is found that the largest monthly rainfall, 6.54, occurred in 1883, and the least, 1.46, in 1877. The rainfall for May, 1887, was 2.36.

The "Minnesota Weather Service," Prof. W. W. Payne, Northfield, director:

Temperature (in degrees Fahr.).—During the month the weather has been unusually cold over the entire state. The temperature ranged from 9.0 below the normal of seventeen years over southern Minnesota to 6.0 below in northern Minnesota. The average temperature for the state was 48.8, this is 12.9 colder than that of the corresponding month of last year, 9.9 colder than that of 1886, and 6.0 colder than that of 1885. At Minneapolis it was the coldest May with one exception, (48.6, May, 1867) since 1865. At Saint Paul, La Crosse, and Duluth it was the coldest May since observations were commenced in 1871. In the past sixteen years at Saint Vincent the temperature was but once lower than that of this month, namely, in 1883, when it was nearly a degree colder. There was a comparative absence of noticeably cold weather, but the temperature remained steadily low throughout the entire month, especially during the first twenty days. The range of temperature for the state was only 68.0, this is somewhat less than that of May for the previous three years. The warmer portion of the month was from the 20th to 31st; the maximum temperature occurred generally in the southern counties on the 22d or 23d, and in the northern on the 26th. The highest temperature recorded throughout the state was 81.0 at Spring Valley on the 23d, while at Medford and Grand Meadow it was 80.0 on the preceding day. A great contrast is noted between the maximum temperature for the state in May of last year, when 96.0 was recorded at Saint Vincent, and this year when it was only 81.0. The average of the maximum temperatures of that month was 90.1, while of this it is only 76.1. The minimum temperature for the month was 12.0, and recorded at Pokegama Falls Dam on the 1st; at Saint Vincent, the next lowest temperature, which was 14.4, occurred on the 17th.

Precipitation (in inches).—The average for the state was 5.02; this is from three to three and a half inches above the amount which fell during the corresponding months of 1885, 1886, 1887. The precipitation has been very unequally distributed, as in the northwestern portion of Minnesota there was a deficiency, while elsewhere throughout the state there was considerable of an excess. The greatest departure below the normal was 2.73, at Saint Vincent, while the greatest departure above was 3.23, at La Crosse. At Saint Paul there was 1.57 more than the usual amount, while at Duluth it was only 0.30 above. Nearly all of the precipitation occurred during the periods of the 2d to 4th (inclusive), 6th to 11th, 17th to 18th, 20th to 24th, 26th, 27th, 30th; on the other days there was a comparative absence of rain. The average number of rainy days in northern Minnesota was about nineteen, while in northwestern Minnesota there were about six. The amount of snow which fell during the month was but very light, the greatest quantity reported as having fallen was two inches at Pine River Dam and Delano. The precipitation at Minneapolis is greater than that of any other May in twenty-three years, while at La Crosse it is the greatest in sixteen years. At Saint Vincent it is the smallest amount recorded in sixteen years.

Wind.—The prevailing direction for the month was from the northwest.

The "Mississippi Weather Service," Prof. R. B. Fulton, of the University of Mississippi, Oxford, director:

The monthly mean temperature, 72°, is 2° below the mean for May, 1887. The highest temperature reached during the past month was 98°, which occurred at Columbus on the 27th. The lowest temperature, 41°, occurred at Hernando on the 1st.

The average rainfall, 3.60 inches, is 0.55 inch in excess of the average for this month last year. Average number of days on which rain fell, 9.

Summary.

Temperature (in degrees Fahr.).—Monthly mean, 72.0; highest monthly mean, 75.0, at Natchez, Pearlington, and Tupelo; lowest monthly mean, 69.0, at Memphis and Batesville; maximum, 98.0, at Columbus, on the 27th; minimum, 41.0, at Hernando, on the 1st; range for the state, 57.0; least local monthly range, 28.0, at Tupelo; greatest local monthly range, 51.0, at Columbus, Waynesborough, and Hernando; greatest daily range, 40.0, at West Point, on the 13th; least daily range, 3.0, on the 24th, at Palo Alto.

Precipitation (in inches).—Average for state, 3.60; greatest, 9.58, at Biloxi; least, 0.71, at Hazlehurst.

The "Missouri Weather Service," Prof. Francis E. Nipher, of Washington University, Saint Louis, director:

The average temperature for May was 61°.7; the highest reported was 93°, at Pro Tem, and the lowest was 30°, at Ironton. The average of maximum temperatures was 85°.5, and the average of minimum temperatures 36°.9, making an average monthly range of 48°.6.

The average precipitation was 5.43 inches, which was 1.38 inches above the normal for May. The greatest amount reported was 13.40 inches at Mound City, and the least, 1.38 inches at Warrensburg.

The "Nebraska Weather Service," Prof. Goodwin D. Swezey, of Doane College, Crete, director:

The month has been cool but with small extremes of temperature, and with heavy rainfall, especially throughout the northern part of the state.

Summary.

Temperature.—The mean temperature for April, 1888, which was 56°.6 in southeastern Nebraska, being the highest for ten years, was followed by a mean for May of only 57°.4, the lowest for six years, so that the latter month has not been essentially warmer than the former. The highest temperature of the month, 84°.5, is the lowest maximum for nine years; the minimum, 27°, is not especially low.

Precipitation.—The rainfall for May is distributed over an area stretching across the northern half of the state and extending down through the middle to the south line; and another area in the southeastern portion of the state, which has received from 5.00 to over 9.00 inches, reaching a maximum in the region of the middle Niobrara. The regions of least rainfall are extreme southwestern corner and the lower parts of the Loup and Elkhorn valleys, the minimum being 3.50 inches at Palmer.

The "Nevada Weather Service," Prof. Charles W. Friend, Carson City, director:

The weather for May was generally cloudy, cool and windy, not very favorable to growing crops, although the rainfall, which for the month of May in Nevada is extremely variable, was this year much above the average. Owing however to the great deficiency of precipitation in the last few months, both agricultural and grazing interests have suffered heavy loss, and on account of the small amount of snowfall upon the mountains in the winter months many of the streams are so low that water cannot be obtained for the irrigation, so that in some sections of the state the crops will be almost a total failure.

Temperature (in degrees Fahr.).—The mean temperature for the month was 56.7, or about 0.5 below the normal; the highest temperature, 87.0, occurred on the 12th; and the lowest, 27.8, on the 2d.

Precipitation (in inches).—The total precipitation was 1.05, or 0.76 of an inch above the normal. Rainfall occurred on eleven days; on four days the amount was inappreciable. The heaviest precipitation occurred on the 14th and 15th, the amount for these two days being 0.80. No snowfall occurred this month. A small amount of hail fell on the 14th and 24th. The defi-

ciency of precipitation since January 1, 1888, is 3.43; and since September 1, 1887, 5.21.

The "New England Meteorological Society," Prof. Wm. H. Niles, of the Institute of Technology, Boston, Massachusetts, president:

General Conditions.—The month can be conveniently divided into four periods, viz., 1st–7th, 8–19th, 20th–23d, 24th–31st. (1) In the first period two cyclones influenced the weather; the first has already been described in the April bulletin as moving into the ocean south of New England on April 30th. It caused light rain and snow on the 1st and 2d. Two days of cool fair weather followed, when the second depression, moving from the Lakes into upper Canada on the 4th, caused rains on the 5th and 6th, which were succeeded by fair weather on the 7th. (2) The second period, including twelve days, was characterized by an unusual succession of rainy days which resulted from the movements of five distinct depressions. The first advancing in Illinois on the 8th was dissipated over Wisconsin on the 9th, while the second, with central pressure 29.3 inches, advanced in the northwest. The latter moved into Upper Canada on the 11th, while a third depression moved from Texas northeasterly into Canada on the 12th. The fourth depression seems to have formed in the Atlantic on the 12th, to have remained nearly stationary off Long Island on the 13th and 14th, and on the 15th to have moved northeasterly. On the 16th and 17th the fifth depression was forming in the southwest, and on the 18th and 19th it passed from Missouri to the Lakes and down the Saint Lawrence Valley. As a result of this succession of cyclones, none of which crossed New England, cloudy and rainy weather prevailed, with occasional fair skies for a few hours, especially on the 16th and 17th. The rains were heaviest on the 11th and 12th, and the pressure was a little below the normal during most of the time. (3) The high area following the last-named cyclone lingered over New England for several days, and fair weather prevailed over the whole district from the 20th to the 23d. (4) From the 24th to the 31st, cloudy weather again prevailed, especially in the southern portion of New England, and a second succession of rainy days with occasional intervals of fair skies occurred, due to the movements of three depressions. The first of these was a lingering cyclone of moderate intensity, which moved from Nebraska to the Lakes between the 22d and 26th. It was followed by the second, which moved with more energy from the Indian Territory down the Saint Lawrence Valley, between the 26th and 29th. The pressure did not rise to the normal after its passage however, and on the 31st, the third depression of this period moved up the Atlantic along the New England coast. In all these depressions the central pressure was about 29.6 inches.

Summary.

Temperature (in degrees Fahr.).—Monthly mean 53.6 (90 stations); highest monthly mean, 58.4, at Hartford; lowest monthly mean, 45.3 at Eastport; maximum, 88, at Lawrence, Olneyville, and Providence, on the 29th; minimum, 18, at Berlin Falls, on the 3d; range for New England, 70; greatest local monthly range, 61, at Berlin Falls; least monthly range, 33, at Nantucket; greatest daily range, 48, at Plymouth (N. H.), on the 22d; least daily range, 1, at Woonsocket, on the 28th.

Precipitation, including melted snow (in inches).—Average for New England, 4.49 (117 stations); greatest, 8.12, at Nantucket, least, 1.46, at Berlin Mills.

Wind.—Prevailing direction, northeast (21 stations).

The "New Jersey Weather Service," Prof. George H. Cook, of the Agricultural College, New Brunswick, director:

The extraordinary character of the month is shown by its record of cloudy and rainy days, and also in the comparative table of precipitation. It was a phenomenal month and will hold a prominent place in the meteorological records of the state for years to come. The agriculturalist, too, will also have cause to remember it; it was so disastrous to the crops, especially to cherries, plums, and peaches.

Temperature (in degrees Fahr.).—Monthly mean, 52.4; highest monthly mean, 63.0, at Bridgeton; lowest monthly mean, 55.1, at Atlantic City; maximum, 91.0, at Oceanic, on 29th; minimum, 26.0, at Hanover, on the 3d; range for state, 65.0; greatest local monthly range, 59.0, at Locktown; least local monthly range, 30.0, at Ocean City; greatest daily range, 47.0, at Bordentown, on the 5th; least daily range, 2.0, at Oceanic, on the 23d.

Precipitation, including melted snow (in inches).—Average for the state, 4.92; greatest, 6.48, at Egg Harbor City; least, 3.00, at Locktown.

Wind.—Prevailing direction, east.

The "North Carolina Weather Service," Dr. Herbert B. Battle, of Raleigh, director:

Nearly all crops were injuriously affected during the month. Wheat and oats will be far below the average yield. In Edgecombe and the adjoining counties of Pitt, Beaufort, and Lenoir, the cotton crop will be almost a complete failure, caused by the excess in rainfall.

Temperature (in degrees Fahr.).—Mean for May, 68.0; departure from the normal, +1.5; highest observed, 96.0, occurred at Chapel Hill, on the 28th; lowest observed, 33.0, occurred at Marion, on the 2d; range for the state, 68.0; highest monthly mean, 73.9, occurred at Southport; lowest monthly mean, 64.0, occurred at Lynchburg, Va.; average monthly range, 46.4; greatest monthly range, 55.0, occurred at Marion; least monthly range, 27.8, occurred at Hatteras; average daily range, 18.5; greatest daily range, 20.4 occurred at Cheraw, S. C.; least daily range, 10.8, occurred at Hatteras,

Precipitation, including melted snow (in inches).—Average for May, 1888, 6.89; departure from the normal, +3.48; greatest monthly rainfall, 13.99, occurred at Marion; least monthly rainfall, 3.46, occurred at Southport.

The "Ohio Meteorological Bureau," Prof. B. F. Thomas, of the Ohio State University, Columbus, president; Charles E. Kilbourne, Secretary:

Temperature (in degrees Fahr.).—The mean temperature for the northern and middle sections, 56 and 59.2, respectively, are each 1.7, and the mean for the southern section, 61.8, is 1.3 below the mean for the past six years. The mean for the state, 59.1, is 2.1 below the average. The maximum temperature, 91, occurred at Pomeroy on the 3d, and at Georgetown on the 11th. The minimum temperature was 23, at Wauseon on the 3d. Killing frost was reported on the 17th by Newcomerstown, Wooster, and New Alexandria, and on the 20th by Canton and North Lewisburg. Light frost was reported by stations in northern and middle sections on the 13th, 14th, 17th, 19th, 20th and 21st, and by stations in the southern section on the 5th, 15th, 17th and 20th. The mean daily range of temperature, 21.8, the lowest mean range for the month of May. The greatest daily range was 50, at Pomeroy, on the 2d, and the least, 2.8, at McConnellsville, on the 1st.

Precipitation, including melted snow (in inches).—General and heavy rains occurred in all sections on the 4th, 8th, 18th, 25th, 27th and 28th, general, though mostly light, rains in all sections on the 1st, 10th, 12th, 29th and 31st. The greatest rainfall in any twenty-four hours, 3.14, occurred at the Ohio State University between the 7 a. m. observations of 8th and 9th. The mean rainfall in the northern section was 3.30, in the middle section 4.40, and in the southern section 3.60. The mean for the state was 3.77. These means are all below the average, the deficiency in the northern section being 0.55, in the middle section 0.04, and in the southern 0.45. The mean for the state is 0.34 below the average, making the deficiency for the year to June 1st 2.35. Thunderstorms were general throughout the state on the 4th, 8th, 9th, 18th, 27th, 28th and 31st.

"Oregon Weather Service," report prepared by B. S. Pague, Sergeant, Signal Corps, Roseburg, Oregon:

The month of May gave to the coast, Umpqua, and Williamette valleys, and Columbia River basin, warm, dry weather. In southern and eastern Oregon the temperature was nearly normal; in the former the precipitation was above the normal, in the latter nearly normal.

Temperature (in degrees Fahr.).—The mean temperature of the state for May was 58, which is about 2 above the normal. Along the coast the temperature was slightly above the normal. In the Williamette and Umpqua valleys all along the Columbia River it was from 2 to 5 above the normal, and in southern and eastern Oregon it was below the normal. Walla Walla reports the highest mean temperature, 65, and Fort Klamath the lowest, 50; in the interior valleys Portland has the highest mean, 62, Eola the lowest, 59.

Precipitation (in inches).—The precipitation was below the normal along the coast; in the Williamette and Umpqua valleys, from 0.64 at Roseburg to 2.30 at Fort Canby. In southern Oregon it was from 0.5 above the normal. In eastern Oregon it was nearly normal. In southern Oregon the precipitation amounted to over 2.00, in eastern Oregon less than 1.00, in the Umpqua and Williamette valleys and along the coast it amounted from a few hundredths to over 1.00, and Cresswell, Lane Co., reports 3.68 of rain; this is the largest amount reported in the state, and east Portland reports .04, the least amount in the state. For the season from 48.0 to 64.0 have fallen along the coast, from 34.0 to 41.0 in the Williamette valley, 28.0 in the Umpqua valley, 16.0 in the Rogue River valley, from 10.0 to 20.0 in the Lake country, and from 6.0 to 15.0 in eastern Oregon.

Wind.—The winds were generally from west to north.

The "Pennsylvania State Weather Service," report prepared under the direction of the Franklin Institute, Philadelphia, by Sergeant T. F. Townsend, Signal Corps:

Temperature (in degrees Fahr.).—The mean temperature of May, 1888, 57.6, is about 3 less than the May average. This departure, together with the deficiency that existed at the beginning of the month, and the unusual number of rainy and cloudy days and cold nights, has increased the lateness of the season, and the growth of vegetation is correspondingly backward.

The lowest reported temperatures were Coudersport, 23.5; Drifton, 24; Dyberry, 24; and Phillipsburg, 24. The highest were Phillipsburg, 91; Johnstown, 90; Coatesville, 89; York, 87.5; Kutztown, 87.8; Altoona and Pottstown, 87. The cold periods of the month were on the 3d and 17th, and the warmest on the 28th and 29th. A killing frost occurred on the 17th, which was general throughout the state. Considerable damage was done by it to fruit and tender vegetables.

Precipitation (in inches).—Rains were of almost daily occurrence, the 6th, 20th, 21st, and 22d being the exceptions. The total average, 4.24, gives an excess of about 1.10. The central part of the state received the greater portion. Huntingdon reports 8.41; Girardville, 7.08; Drifton, 5.69; Chambersburg, 5.55; and Carlisle, 5.14; while Erie had but 2.26; Wysox, 2.31; Bethlehem, 2.33; and Meadville, 2.56. The heavy rains occurred on the 9th, 18th, and 28th. The latter, in many places, was attended by severe hail storms. Several stations report a light snowfall on the 15th.

Wind.—Prevailing direction, west.

The "South Carolina Weather Service," Hon. A. P. Butler, Com'r of Agriculture for South Carolina, Columbia, director:

Summary.

Temperature (in degrees Fahr.).—Monthly mean, 70.2; highest monthly mean, 73.8, at Orangeburg; lowest monthly mean, 65.4, at Spartanburg; maximum, 99, at Orangeburg, on 28th; minimum, 33, at Cedar Springs on the 15th; range for state, 66.0; greatest local monthly range, 60.0, at Cedar Springs; least local monthly range, 30.0, at Timmonsville; greatest daily range, 45.0, at Winnsborough, on the 17th; least daily range, 0, on the 10th at Clinton.

Precipitation, including melted snow (in inches).—Average for the state, 7.51; greatest, 11.55, Spartanburg; least, 4.61, at Timmonsville.

The following is an extract from the report of the "Meteorological Department of the State (Tennessee) Board of Health," prepared under direction of J. D. Plunket, M. D., President of the State Board of Health, by H. C. Bate, Signal Corps, Assistant, Nashville:

The meteorological conditions for May show but few departures from the normal of the past six years. The principal feature was the period of low temperature about the 15th, culminating in a heavy frost in most parts of the state. There were no very-high winds, and only one severe electric storm, which was rather local in its character, except as to the rain accompanying it. The percentage of cloudiness was above the normal.

The mean temperature was 65°.7, very nearly the normal for the past six years. The highest local mean was 70°.2, recorded at Bolivar, and the lowest 60°.3, recorded at Fostoria. The highest temperature was 90°.0, recorded on the 26th, and was the lowest May maximum recorded during the past six years, except in 1884, when it was the same, the highest being 94°.0 in 1885. The lowest temperature was 30°.0, recorded on the 15th, and was the lowest by three degrees during the period named, and the same as the April minimum. The days on which the maximum temperature was recorded were the 11th, 26th, 27th, and 28th. The minimum temperature was recorded on the 15th, generally in the eastern and middle divisions, and on the 1st, 2d, and 14th in the western division, and at a few stations in the middle division. The daily ranges of temperature were very nearly the normal.

The mean precipitation was 3.72 inches, slightly below the May mean for the past six years, and the least during that period, except in 1884 and 1887. Of this amount, the eastern division received an average of nearly five and a half inches, the middle division a little more than three inches, and the western division about two and a half inches. The rains during the month were at most of the stations frequent, but generally light, the heaviest fall being reported at Chattanooga on the 30th, measuring 2.45 inches; the next heaviest was 1.70 inches, reported at Riddleton on the 24th, 1.68 inches at Parksville on the 31st, and 1.65 inches at Fayetteville on the 18th. The rain of the 24th at Trenton was perhaps the heaviest in the state during the month, 1.45 inches falling in one hour. There were a few other stations where more than an inch of rain in twenty-four consecutive hours was reported. The frequency of the rains in various parts of the state can be imagined from the fact that only two days during the month were reported as without measurable rainfall at any of the stations, and on one of these a trace or sprinkle was recorded. These days were the 26th and 27th. The greatest monthly rainfall was 8.00 inches, reported at Newport, and the least, 1.90 inches, at Milan. Hail fell at a few stations. Dews were reported at various stations on eighteen days, and frosts on four days, the last, on the 15th, being a killing frost at many stations, especially in the eastern and middle divisions.

Table showing monthly and annual mean temperatures at Philadelphia, Pa., from observations furnished by Dr. J. R. Coxe, Chas. Peirce, James Young, Dr. Thos. Hewson, Journal Franklin Institute, A. D. Bache, Dr. Conrad, Prof. J. A. Kirkpatric, and the Signal Service.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1758 ...	37.2	32.2	38.6	53.3	63.5	72.1	75.7	71.3	64.0	56.7	44.0	34.5	53.6
1759 ...	30.0	38.4	41.4	49.4	62.4	71.6	73.0	69.7	65.2	55.3	46.4	30.4	52.7
1767 ...	31.7	32.5	41.0	51.0	61.6	71.2	74.0	75.5	64.5	54.0	46.7	35.3	53.3
1768 ...	28.0	46.0	39.5	46.0	59.0	68.6	71.5	65.7	64.0	50.0	42.0	37.7	51.5
1769 ...	33.0	32.0	42.0	50.0	57.0	68.0	77.0	74.0	64.0	55.0	38.0	32.0	51.8
1770 ...	30.5	37.5	38.5	48.5	57.5	70.0	73.5	71.5	64.0	52.5	46.5	33.5	52.0
1771 ...	36.0	29.0	41.0	53.0	58.0	67.0	71.0	73.0	63.0	53.0	48.0	30.0	51.8
1772 ...	32.5	40.5	30.0	51.0	56.0	67.0	75.0	77.0	64.0	55.5	45.5	36.5	52.6
1773 ...	32.6	33.7	42.1	52.2	62.7	73.4	79.6	76.0	63.9	58.2	42.2	39.9	54.7
1774 ...	27.0	32.4	43.1	54.6	60.1	67.8	72.8	73.7	63.7	59.3	44.1	36.4	52.9
1775 ...	35.6	41.2	45.3	51.4	65.8	68.3	75.1	72.8	65.6	54.6	41.4	35.7	54.4
1776 ...	32.7	34.2	42.2	51.0	59.9	69.9	74.2	72.8	67.3	55.9	46.3	35.3	53.5
1777 ...	31.0	31.6	40.3	52.2	57.1	70.4	70.6	75.9	59.2	50.0	39.5	33.7	51.0
1790 ...	44.0	32.0	38.0	50.0	56.0	70.0	78.0	74.0	66.0	50.0	40.0	30.0	52.3
1791 ...	30.0	28.0	40.0	54.0	58.0	74.0	80.0	75.0	64.0	52.0	41.0	32.0	52.3
1792 ...	32.0	30.0	37.0	52.0	58.0	72.0	77.0	76.0	63.0	50.0	40.0	30.0	51.4
1793 ...	40.0	32.0	34.0	46.0	62.0	76.0	81.0	74.0	70.0	64.0	38.0	30.0	53.9
1794 ...	32.0	31.0	36.0	44.0	61.0	70.0	73.0	71.0	62.0	50.0	40.0	31.0	50.1
1795 ...	30.0	30.0	34.0	50.0	68.0	70.0	78.0	70.0	64.0	52.0	41.0	30.0	51.4
1796 ...	30.0	28.0	38.0	48.0	64.0	72.0	75.0	72.0	68.0	50.0	43.0	32.0	51.7
1797 ...	28.0	26.0	36.0	46.0	64.0	73.0	76.0	74.0	66.0	55.0	40.0	30.0	51.2
1798 ...	33.1	32.3	43.2	53.0	65.7	74.1	76.4	81.6	67.8	58.2	41.1	31.5	54.8
1799 ...	33.7	32.9	38.8	54.2	61.1	71.9	76.2	74.5	67.2	55.0	46.4	33.7	53.8
1800 ...	31.8	31.4	38.7	55.9	61.3	71.0	76.2	73.4	66.6	54.9	40.7	36.8	53.2
1801 ...	31.2	34.5	44.4	49.0	64.6	70.9	76.4	72.8	69.1	56.5	42.0	35.7	53.9

Monthly and annual mean temperatures at Philadelphia.—Continued.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1802 ...	40.8	34.5	42.3	52.9	59.4	71.8	74.7	74.5	67.2	59.9	45.6	33.3	54.7
1803 ...	32.9	36.3	41.9	54.2	58.9	73.0	78.0	75.7	65.9	57.9	43.2	40.6	54.9
1804 ...	29.6	34.0	38.7	50.9	63.8	70.3	76.9	76.5	72.8	57.3	46.9	32.6	54.2
1805 ...	29.0	29.0	40.0	52.0	63.0	71.0	73.0	70.0	66.0	52.0	44.0	30.0	51.6
1806 ...	30.0	28.0	38.0	47.0	67.0	70.0	73.0	69.0	64.0	55.0	45.0	32.0	51.5
1807 ...	32.0	33.3	39.0	52.5	62.3	70.0	75.0	75.5	68.8	60.2	42.5	43.0	54.5
1808 ...	33.2	41.0	48.8	60.7	67.0	81.0	81.0	80.7	72.2	59.5	47.8	39.3	59.4
1809 ...	29.8	33.7	42.8	57.3	67.5	78.5	78.2	76.8	71.8	66.3	43.2	40.5	57.2
1810 ...	34.0	39.0	42.7	61.0	72.0	78.0	79.3	78.0	73.7	58.8	45.0	36.5	58.2
1811 ...	34.5	33.8	53.8	56.7	66.0	76.3	84.7	79.7	74.0	65.2	49.0	37.0	59.2
1812 ...	31.0	36.7	45.0	58.3	64.0	79.0	83.0	79.5	70.0	59.3	46.3	37.2	57.4
1813 ...	31.5	33.3	45.0	60.0	67.3	83.5	81.3	82.8	76.0	57.3	47.5	35.0	58.4
1814 ...	32.7	38.7	43.0	59.8	70.7	77.5	82.0	79.7	73.5	60.2	48.7	35.0	58.5
1815 ...	34.8	32.2	47.8	57.5	65.5	78.2	86.5	81.5	71.8	60.5	50.3	35.5	58.5
1816 ...	30.7	40.0	44.7	57.2	67.0	75.0	76.7	79.5	70.0	60.5	49.5	39.5	57.5
1817 ...	31.0	27.3	45.0	61.0	68.3	74.0	80.8	79.5	72.7	57.5	50.2	37.0	57.0
1818 ...	33.0	30.2	45.5	53.8	65.5	80.8	82.7	79.2	70.8	59.8	51.5	32.7	57.1
1819 ...	36.0	39.3	40.3	59.1	66.2	81.9	84.4	83.5	75.8	58.0	50.7	35.6	59.2
1820 ...	30.0	43.8	46.5	46.8	66.2	80.6	86.4	83.4	76.0	58.1	44.1	34.5	58.0
1821 ...	25.0	40.0	45.5	54.8	69.5	81.5	82.1	84.9	75.5	61.3	45.6	43.3	58.3
1822 ...	30.0	38.5	48.5	56.7	74.0	80.0	84.4	82.6	82.6	64.1	53.1	36.1	60.9
1823 ...	34.8	29.6	44.7	61.1	69.6	78.8	81.5	81.9	71.5	58.6	43.0	38.4	57.7
1824 ...	39.8	34.6	44.9	54.7	64.4	78.4	83.6	79.5	71.9	61.6	47.7	40.9	58.5
1825 ...	36.7	38.3	51.1	60.4	71.4	82.9	85.4	82.2	73.7	66.0	48.5	36.8	61.1
1826 ...	34.4	39.4	48.1	54.3	78.5	82.0	85.2	82.7	75.6	63.5	48.6	37.5	60.8
1827 ...	28.0	27.0	36.0	50.0	62.0	71.0	75.0	70.0	64.0	46.0	38.0	36.0	50.2
1828 ...	39.0	40.0	42.0	56.0	65.0	77.0	80.0	76.0	65.0	56.0	42.0	38.0	56.3
1829 ...	30.0	25.0	35.0	51.0	64.0	70.0	72.0	61.0	61.0	52.0	43.0	43.0	50.6
1830 ...	33.0	30.0	41.0	53.0	63.0	68.0	76.0	72.0	64.0	54.0	50.0	37.0	53.4
1831 ...	25.3	26.3	44.2	51.9	62.5	74.4	73.3	74.3	65.8	55.5	41.6	22.2	51.4
1832 ...	30.3	33.8	42.1	48.0	581.	68.7	73.1	71.7	63.1	53.0	43.8	34.7	51.5
1833 ...	33.2	30.4	36.2	52.5	66.7	65.7	72.6	69.4	63.6	50.4	39.5	34.2	51.2
1834 ...	28.2	39.3	41.6	50.5	59.6	68.2	77.4	73.5	64.1	49.3	39.8	32.3	52.0
1835 ...	29.8	25.3	37.1	48.6	60.6	68.9	72.5	68.6	58.5	56.2	44.2	28.8	49.9
1836 ...	29.9	22.9	33.4	48.1	62.9	65.1	72.9	68.0	66.1	46.4	39.4	31.0	48.8
1837 ...	28.8	31.0	37.7	46.4	60.4	68.1	71.4	69.9	61.5	53.2	44.4	33.8	50.6
1838 ...	35.8	23.2	40.6	45.5	57.6	72.2	78.5	73.6	66.1	49.7	39.8	28.8	51.0
1839 ...	29.5	32.4	36.0	53.4	62.2	65.8	73.6	70.0	64.0	56.0	40.0	34.0	51.4
1840 ...	24.0	39.0	44.0	55.5	61.0	67.9	72.1	71.6	59.1	53.5	41.7	28.5	51.5
1841 ...	31.3	27.6	38.4	46.0	56.7	71.1	72.9	71.6	66.2	48.0	41.3	34.8	50.5
1842 ...	34.9	38.3	46.0	51.6	57.9	66.5	73.3	70.3	63.7	51.8	38.2	32.1	52.0
1843 ...	39.1	36.6	29.7	49.8	57.5	69.0	72.0	72.9	66.4	50.4	40.0	33.6	50.6
1844 ...	26.6	32.2	41.9	54.3	63.3	68.1	73.6	71.1	64.9	52.6	42.5	34.2	52.1
1845 ...	36.6	33.2	43.1	51.3	59.0	70.4	76.0	74.0	65.0	56.0	46.0	28.5	53.3
1846 ...	33.3	29.5	42.7	53.2	64.0	68.8	74.5	74.8	70.8	55.3	49.5	35.8	54.4
1847 ...	32.3	33.2	38.7	51.2	61.8	70.5	76.5	73.5	66.0	54.0	48.3	39.5	53.8
1848 ...	36.7	23.6	39.4	54.4	65.8	73.4	74.8	74.5	64.5	56.2	41.0	43.2	54.0
1849 ...	29.0	27.5	42.5	50.6	58.4	73.5	74.7	74.4	64.4	55.3	51.5	34.4	53.0
1850 ...	35.8	37.1	39.5	48.1	57.7	71.9	77.4	73.0	66.9	56.0	48.0	36.5	54.0
1851 ...	35.2	39.8	43.5	52.0	62.6	70.4	78.6	74.2	69.0	58.6	43.6	30.2	54.8
1852 ...	26.5	33.8	41.2	47.3	64.3	72.9	78.0	74.1	67.3	58.8	42.5	41.7	54.0
1853 ...	33.2	37.8	42.8	53.4	64.3	75.3	76.6	75.7	68.5	53.9	48.4	35.3	55.4
1854 ...	32.9	34.8	43.2	51.4	65.3	73.3	80.3	76.6	70.2	59.2	46.1	31.3	55.4
1855 ...	34.3	26.7	38.8	52.9	63.8	71.9	79.7	75.0	70.2	55.2	48.3	37.5	51.9
1856 ...	23.6	26.7	33.4	54.5	62.7	77.2	80.1	72.2	66.2	53.4	43.1	30.1	53.5
1857 ...	20.9	39.9	38.2	45.4	61.2	71.2	77.3	75.3	69.2	56.2	45.9	41.0	54.5
1858 ...	40.8	30.1	40.7	52.5	59.3	77.5	79.2	75.0	67.9	59.5	42.2	37.6	55.2
1859 ...	34.0	36.4	49.1	50.3	64.6	70.8	76.0	74.5	66.2	52.3	47.5	33.0	54.5
1860 ...	33.0	33.1	44.5	49.1	63.5	71.1	76.2	74.9	65.4	56.5	46.1	32.2	53.8
1861 ...	31.0	39.4	42.4	52.5	58.8	72.5	75.0	72.6	67.6	59.6	43.8	36.6	54.3
1862 ...	32.0	31.9	39.2	49.1	62.6	68.2	75.1	76.2	68.7	57.8	43.9	35.4	53.3
1863 ...	37.0	33.9	36.2	48.3	74.1	69.1	76.8	79.0	65.4	55.0	46.8	34.8	53.9
1864 ...	32.7	35.2	39.4	49.3	66.5	71.4	77.4	79.1	66.7	54.0	44.9	35.8	54.4
1865 ...	26.6	32.4	46.7	55.6	62.9	76.6	77.9	75.6	73.8	55.6	45.0	37.5	55.5
1866 ...	30.1	35.4	41.0	55.3	61.2	73.3	80.2	72.2	69.3	56.4	47.3	34.3	54.7
1867 ...	26.3	40.1	37.5	52.9	57.2	71.0	75.8	74.6	67.6	56.4	46.8	31.8	53.2
1868 ...	30.2	26.6	40.8	47.0	58.0	71.7	81.4	77.5	67.8	53.2	45.7	32.5	52.7
1869 ...	36.6	39.4	38.9	52.8	60.1	72.8	75.8	75.1*	68.3	51.4	41.3	37.6	54.2
1870 ...	40.4	34.8	37.8	52.2	63.6	76.0	79.9	77.8	70.0	59.0	46.7	36.6	56.2
1871 ...	32.7	36.8	48.6	57.1	65.0	70.4	75.4	76.9	62.6	56.5	40.0	30.2	54.5
1872 ...	29.6	31.4	31.7	51.3	64.2	72.3	78.3	76.0	66.4	53.3	41.0	28.3	52.0
1873 ...	29.0	29.6	37.1	47.5	59.2	70.7	76.4	72.1	65.9	55.0	38.0	37.8	51.5
1874 ...	35.4	33.0	40.2	42.6	59.9	72.7	76.2	71.3	67.6	55.0	42.8	35.1	52.0
1875 ...	25.8	25.6	34.7	45.0	61.6	70.2	74.8	72.2	63.9	53.4	39.4	34.3	50.1
1876 ...	37.4	34.2	37.1	49.1	61.5	73.9	78.4	74.2	63.8	50.4	44.4	25.1	52.5
1877 ...	27.9	36.1	37.9	50.0	60.8	71.6	75.7	75.5	66.7	56.8	48.0	40.0	53.9
1878 ...	32.6	36.6	46.4	55.6	60.8	67.8	77.3	73.7	67.7	58.0	44.5	34.2	54.6
1879 ...	29.5	29.4	40.9	48.8	63.3	71.6	75.7	72.7	64.2	61.4	44.7	38.7	53.4
1880 ...	40.9	38.9	39.4	52.4	68.3	73.1	74.8	75.2	67.7	54.7	40.2	28.5	54.5
1881 ...	26.9	30.3	38.5	48.5	63.8	67.1	75.5	75.0	74.8	60.8	47.5	41.7	54.2
1882 ...	31.2	39.6	43.9	50.0	57.3	72.9	77.4	73.9	69.1	60.6	43.8	35.9	54.6
1883 ...	30.1	36.6	37.6	50.0	62.4	73.7	76.1	71.9	64.5	55.3	47.4	37.1	53.6
1884 ...	29.5	40.3	41.5	48.7	61.3	70.5	71.8	72.5	70.6	57.2	43.8	34.6	53.5
1885 ...	29.9	23.4	30.8	49.8	59.6	70.6	77.2	71.8	65.2	54.8	45.0	36.7	51.2
1886 ...	29.4	30.9	40.0	53.4	60.9	68.6	74.6	73.2	69.2	58.2	46.5	31.0	53.0
1887 ...	30.5	36.1	36.4	49.8	66.7	70.9	79.7	73.0	64.0	55.6	45.3	36.9	53.8
Mean..	32.0	33.4	40.7	51.9	62.8	72.4	76.9	74.7	67.3	55.9	44.3	34.7	53.9

* Interpolated.

Record of coldest days during one hundred years at Thompson, Conn., made by Mr. J. A. Wheelock, his father and grandfather, and by Mrs. Ellen D. Larned, who furnished the data to the Chief Signal Officer.

Year.	Month.	Day.	Temperature.	Year.	Month.	Day.	Temperature.
			°				°
1771	January	12	— 9	1831	January	6	—15
1772	January	19	—12	1832	January	16	—12
1773	January	4	— 8	1833	January	12	—10
1774	February	19	—10	1834	January	4	— 2
1775	January	19	—12	1835	January	26	— 6
1776	January	5	— 9	1836	February	4	— 2
1777	January	17	—10	1837	January	6	— 8
1778	January	15	—12	1838	January	19	—10
1779	January	4	— 8	1839	January	16	— 6
1780	February	12	— 9	1840	January	12	—12
1781	February	19	—12	1841	January	6	—10
1782	January	5	—10	1842	January	26	—12
1783	January	6	—15	1843	January	27	— 8
1784	January	19	—12	1844	February	4	—11
1785	March	4	—10	1845	February	6	— 2
1786	January	6	—12	1846	January	7	— 9
1787	January	9	— 9	1847	January	12	— 4
1788	February	6	—12	1848	February	6	—10
1789	February	9	—10	1849	February	4	— 3
1790	January	17	—16	1850	February	18	— 5
1791	January	6	—25	1851	January	17	— 9
1792	January	19	—15	1852	January	4	— 4
1793	January	6	—12	1853	January	27	— 6
1794	February	5	—14	1854	January	4	— 9
1795	January	9	—10	1855	January	17	—20
1796	January	19	—12	1856	January	21	—17
1797	January	5	—15	1857	January	4	—20
1798	January	19	—17	1858	February	4	—19
1799	February	5	—10	1859	January	7	—17
1800	February	4	—12	1860	February	14	—16
1801	January	9	—10	1861	February	4	—15
1802	January	19	— 9	1862	January	17	— 9
1803	January	6	— 6	1863	February	6	—10
1804	January	15	—10	1864	January	7	—17
1805	January	12	— 4	1865	January	4	—12
1806	February	5	— 2	1866	January	17	—19
1807	February	6	— 4	1867	January	27	—15
1808	January	19	—10	1868	January	7	— 9
1809	January	9	— 8	1869	January	13	— 5
1810	March	4	— 4	1870	March	3	— 2
1811	February	6	— 2	1871	February	5	—13
1812	January	16	— 6	1872	March	5	— 6
1813	January	6	— 9	1873	January	30	—11
1814	January	19	—10	1874	February	6	0
1815	January	5	—20	1875	December	20	— 8
1816	February	9	— 8	1876	February	24	— 5
1817	February	4	— 6	1877	January	5	2
1818	January	6	—10	1878	January	8	— 4
1819	January	19	—12	1879	January	21	— 4
1820	January	5	— 6	1880	December	31	— 6
1821	January	4	— 2	1881	January	1	— 5
1822	February	6	— 1		February	2	
1823	January	9	— 4	1882	January	24	—16
1824	January	16	—12	1883	December	23	—14
1825	January	12	— 8	1884	No record.		
1826	January	25	— 4	1885			
1827	January	26	— 8	1886	January	13	—11
1828	February	6	— 2	1887	January	19	—10
1829	February	4	— 4	1888	January	29	—11
1830	January	19	—10				

Monthly and annual mean temperatures, in degrees Fahr., at Cooperstown, Otsego Co., N. Y., from observations furnished by G. Pomeroy Keese.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1854	23.4	20.0	29.4	40.2	57.2	66.9	73.4	69.0	61.5	51.0	38.0	22.8	46.1
1855	25.2	14.9	27.4	39.8	52.6	60.3	68.8	64.0	58.5	44.9	36.8	26.2	43.3
1856	14.3	16.5	21.3	43.3	53.0	65.3	69.7	62.3	57.7	44.3	36.0	20.7	42.0
1857	10.3	31.7	28.0	36.3	50.7	59.7	68.7	63.7	57.0	44.3	33.7	29.7	42.8
1858	27.7	17.0	28.0	41.7	49.7	66.0	67.3	62.3	55.3	47.0	31.0	25.3	43.2
1859	21.7	25.7	34.7	38.3	57.0	60.0	65.0	64.0	54.0	44.3	37.7	19.0	43.5
1860	24.7	20.7	31.3	38.3	56.3	61.5	62.7	63.7	53.3	46.0	36.5	21.7	43.1
1861	18.7	26.0	27.3	40.3	46.7	61.3	64.7	61.0	55.3	47.3	32.0	24.5	42.1
1862	18.3	18.3	26.0	37.3	51.3	58.3	64.0	63.3	57.0	45.3	33.7	25.3	41.7
1863	25.3	20.0	20.7	38.3	53.7	57.3	67.0	65.0	53.3	43.3	35.7	21.7	41.7
1864	21.3	24.0	27.0	37.7	59.7	60.7	67.0	66.3	54.3	45.0	33.3	23.3	42.7
1865	14.3	17.0	32.3	43.0	52.3	66.3	63.0	61.3	60.7	40.7	34.0	27.0	42.7
1866	15.3	21.7	26.0	43.3	50.7	65.7	71.3	61.0	58.0	48.7	38.0	22.0	43.5
1867	13.3	29.3	27.3	42.7	50.0	66.7	66.7	66.7	59.3	48.3	36.7	18.7	43.8
1868	17.0	13.0	32.0	38.0	54.0	65.7	76.0	69.0	58.3	43.3	35.0	19.3	43.4
1869	24.7	24.0	24.0	42.3	54.0	65.0	68.7	66.0	63.0	43.3	33.0	27.0	44.6
1870	27.8	19.5	24.7	46.5	58.6	71.9	73.4	69.1	60.6	49.4	36.6	24.9	46.9
1871	19.8	22.0	37.2	45.5	55.6	63.8	67.2	68.7	53.9	49.8	29.8	21.5	44.6
1872	20.2	17.3	19.2	42.0	57.0	67.1	71.9	71.2	60.9	46.1	34.5	15.8	43.6
1873	17.3	18.7	25.6	39.5	57.0	66.1	70.0	66.6	58.8	47.2	26.8	28.6	43.5
1874	27.1	19.8	28.5	33.6	56.2	66.3	70.0	66.0	62.7	47.5	35.0	25.4	44.8
1875	12.3	10.7	24.0	36.6	55.5	65.0	68.5	66.3	57.3	45.5	29.5	26.5	41.5
1876	28.0	22.8	26.5	39.5	55.0	70.0	72.5	71.0	58.2	44.1	38.5	14.7	45.1
1877	17.4	26.5	28.5	44.0	56.5	67.6	70.6	71.5	62.5	51.3	38.5	31.8	45.6
1878	21.3	24.3	36.0	51.6	53.3	62.4	70.0	67.2	59.8	49.0	35.7	24.5	46.3
1879	18.3	17.8	29.0	38.0	57.0	63.5	69.3	65.5	56.6	53.3	34.7	29.0	44.3
1880	31.6	27.3	28.0	43.3	60.7	64.5	68.3	63.7	58.7	45.0	29.7	18.3	44.9
1881	14.0	19.0	30.0	38.1	59.7	59.0	68.0	67.0	66.7	49.6	36.3	33.1	45.0
1882	20.7	26.3	31.3	39.0	49.7	62.3	68.3	68.7	60.3	50.0	33.1	24.4	44.5
1883	16.6	22.0	21.8	39.6	54.3	66.7	68.0	64.3	56.3	45.0	37.3	25.5	43.1
1884	17.3	27.5	28.3	40.7	51.3	65.7	64.5	66.5	61.6	48.3	36.1	27.5	44.6
1885	19.0	10.5	18.3	40.3	53.5	62.5	68.3	63.5	56.3	46.3	37.7	27.5	42.0
1886	18.3	20.0	29.0	46.1	54.0	60.8	65.6	63.7	59.0	48.0	35.5	21.0	43.4
1887	18.0	22.5	24.0	38.5	60.7	65.5	73.0	64.0	54.7	44.7	34.5	25.7	43.8
Mean.	20.0	21.0	27.4	40.7	54.5	64.0	68.6	65.7	55.3	46.7	34.7	27.1	43.8

Rainfall in inches and hundredths at Cooperstown, Otsego Co., N. Y., from observations furnished by G. Pomeroy Keese.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1854	2.10	3.46	3.33	7.12	3.11	2.85	2.25	1.43	4.13	3.11	2.71	2.30	37.90
1855	3.34	1.23	0.61	4.15	2.20	9.76	4.84	6.78	2.24	5.28	3.56	4.13	48.12
1856	1.12	0.60	1.54	3.42	4.44	2.19	2.82	9.46	3.45	0.88	2.00	2.65	34.57
1857	2.36	2.15	1.83	5.53	5.63	7.80	5.20	6.79	2.45	6.65	2.29	3.32	52.00
1858	1.77	1.66	0.97	2.66	4.65	8.08	7.11	3.43	2.43	4.46	5.38	2.82	45.42
1859	2.53	0.94	3.95	4.19	1.92	5.39	4.47	4.65	5.41	1.66	3.18	3.02	41.31
1860	0.32	0.71	1.05	1.55	1.83	3.15	6.89	7.07	2.69	2.80	4.22	1.45	33.73
1861	2.00	1.30	2.71	3.92	3.14	1.97	7.36	4.64	3.57	5.16	3.13	1.78	40.68
1862	3.66	1.73	3.80	1.90	1.40	6.13	3.37	3.28	2.39	4.80	4.17	1.34	37.97
1863	4.04	2.32	2.92	0.92	6.28	3.43	7.92	5.86	4.33	1.74	3.59	3.94	47.29
1864	1.68	0.85	2.29	2.19	3.40	1.00	1.79	5.81	2.86	2.39	2.37	3.27	29.90
1865	2.23	1.60	3.45	2.19	4.92	2.39	3.70	1.02	4.86	3.80	3.34	1.94	35.44
1866	0.97	3.45	1.70	1.02	2.00	4.27	3.57	2.24	5.04	1.32	4.25	2.50	32.33
1867	0.85	3.45	1.70	3.54	7.38	2.15	3.35	5.40	3.36	3.68	1.52	1.63	38.01
1868	2.24	0.93	2.74	2.43	5.76	4.94	0.89	2.47	5.74	2.10	5.28	1.91	37.43
1869	4.31	2.67	2.88	3.68	5.49	4.31	4.57	3.02	3.31	6.10	1.91	3.69	45.94
1870	4.17	3.72	2.53	2.36	1.94	0.95	4.14	2.74	2.76	3.80	1.92	1.96	32.99
1871	1.14	1.94	5.29	2.66	3.18	5.24	4.64	4.50	1.17	1.97	2.68	1.76	36.17
1872	0.52	1.58	0.80	1.17	4.16	7.31	5.84	4.45	3.32	3.62	1.98	2.17	36.92
1873	3.01	1.67	4.00	3.09	1.65	1.94	5.26	5.52	3.41	5.62	4.16	2.86	42.19
1874	3.70	3.30	1.35	4.10	1.68	7.00	5.34	1.06	2.25	2.60	2.85	1.27	36.50
1875	2.16	1.19	3.19	2.55	2.36	5.24	3.24	5.85	2.52	4.96	3.00	1.48	37.74
1876	2.11	4.13	3.36	1.68	1.97	4.93	5.13	0.63	5.79	1.73	1.45	2.26	35.17
1877	2.58	0.63	3.37	1.77	1.27	4.71	6.78	2.84	1.92	4.42	3.22	0.97	34.46
1878	3.33	1.80	2.87	2.47	4.20	4.25	3.57	2.93	3.29	3.29	3.18	3.80	38.98
1879	2.35	2.91	2.01	3.48	0.36	4.16	2.85	1.43	2.12	1.26	3.00	4.26	30.19
1880	4.26	2.26	1.71	2.76	3.32	2.78	4.49	2.78	3.17	2.42	3.02	1.23	34.20
1881	2.54	1.53	3.05	0.98	3.00	3.59	3.07	0.72	1.43	4.89	3.24	6.02	34.06
1882	2.67	3.17	2.48	1.30	3.98	4.88	2.44	0.91	3.68	1.48	1.79	2.02	30.80
1883	1.49	3.74	1.69	1.68	3.15	4.62	4.77	3.21	5.05	2.96	1.76	1.93	36.05
1884	3.17	3.16	4.48	1.29	3.97	2.16	3.01	2.46	1.29	3.31	2.86	4.00	35.07
1885	3.00	2.46	0.55	1.94	3.39	3.59	3.00	9.08	1.96	4.19	3.05	2.15	38.36
1886	1.83	1.86	2.92	1.86	2.50	3.01	3.02	2.56	4.12	2.54	4.72	2.00	32.94
1887	3.23	5.21	4.32	2.42	2.83	2.56	2.85	3.34	1.42	1.19	3.15	3.43	35.95
Mean.	2.43	2.21	2.57	2.64	3.31	4.20	4.22	3.83	3.20	3.30	3.06	2.57	37.55

Monthly and annual mean temperatures (in degrees Fahr.) at New Ulm, Austin Co., Tex., from observations of Mr. C. Runge.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1872	.....	.....	.....	.....	.....	.....	84.3	83.4	81.1	70.4	54.4	47.1	.....
1873	47.3	58.1	63.4	65.7	73.7	79.1	80.7	84.4	77.2	65.8	59.7	56.2	67.6
1874	54.4	55.6	65.2	63.6	74.2	80.1	82.3	82.5	76.3	70.1	63.3	57.4	68.8
1875	34.8	56.6	61.4	65.2	74.9	80.6	82.8	82.4	75.7	68.8	62.2	60.9	67.9
1876	59.6	59.1	59.6	69.1	74.4	79.8	83.2	83.8	75.6	70.1	56.6	46.1	68.1
1877	48.2	55.3	62.7	67.7	73.2	72.2	81.2	82.8	79.4	79.6	56.0	55.4	67.0
1878	50.6	55.6	67.8	71.4	75.9	81.6	83.1	80.9	77.5	71.6	61.1	48.2	68.8
1879	52.5	55.0	78.4	70.3	77.4	81.4	85.0	79.4	72.4	70.9	65.6	58.3	69.7
1880	63.7	56.4	60.5	71.4	75.7	79.9	80.6	82.4	76.1	66.0	49.6	51.3	67.8
1881	43.2	53.3	62.4	69.0	76.2	85.0	84.1	82.8	79.2	73.9	58.6	57.2	68.7
1882	55.8	62.0	66.4	71.2	73.4	80.3	82.0	79.4	76.8	73.3	60.5	54.2	69.6
1883	47.2	52.6	62.4	69.8	73.6	80.7	82.0	83.5	76.4	72.9	61.6	55.2	68.2
1884	44.0	56.5	63.4	65.0	72.2	79.0	84.2	82.6	80.0	69.9	57.9	53.6*	67.4
1885	50.0*	56.3*	58.0	69.3	72.0	81.2	81.5	83.6	77.8	66.4	61.2	54.4	67.6
1886	43.6	54.2	58.7	66.6	76.1	81.7	83.4	84.0	77.8	69.1	58.7	52.7	67.2
1887	49.6	59.2	64.2	68.9	75.1	79.2	83.3	83.4	78.3	67.0	59.8	48.8	68.1
1888	46.5	55.5	57.3	70.9	72.6	78.4	.....	.....	.....	.....	.....	.....	.....
Mean.	50.0	56.3	62.6	68.4	74.4	80.0	82.7	83.2	76.7	69.7	59.2	53.6	68.1

*Interpolated.

Precipitation (in inches and hundredths) at New Ulm, Austin Co., Tex., from observations of Mr. C. Runge.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1872	.....	.....	.....	.....	.....	.....	0.90	2.35	0.90	4.30	4.25	6.63	19.33
1873	6.00	2.15	4.80	8.00	1.88	11.33	14.38	4.48	8.95	5.10	14.93	3.08	85.08
1874	2.23	6.94	8.45	4.30	2.90	3.76	6.46	1.96	15.08	0.79	5.81	8.96	67.64
1875	3.68	7.00	2.56	5.06	4.23	1.89	2.13	0.90	12.49	3.54	3.50	16.43	63.41
1876	3.43	2.46	7.15	1.08	6.13	3.23	8.13	2.60	3.53	1.73	1.13	2.63	43.23
1877	1.13	6.75	4.25	5.94	4.50	9.00	2.10	0.55	2.38	11.31	6.04	5.35	59.30
1878	5.88	3.56	2.35	1.88	3.56	4.38	5.44	8.38	5.06	1.19	6.96	5.00	52.64
1879	4.38	1.13	3.96	6.44	3.19	3.06	2.00	4.19	3.44	4.00	0.78	2.59	39.16
1880	6.44	7.15	9.13	4.13	6.22	4.59	8.75	4.06	4.25	3.50	8.63	0.44	67.29
1881	1.75	8.31	2.44	2.75	4.63	0.63	5.69	5.63	3.41	12.44	8.75	3.56	59.99
1882	10.56	10.94	4.81	2.94	12.25	0.81	2.44	4.63	3.88	5.95	7.63	2.25	79.09
1883	7.72	4.31	13.13	2.54	3.07	3.38	1.22	2.19	7.71	3.51	5.32	2.01	56.71
1884	3.43	2.58	4.86	4.68	15.25	2.82	0.00	0.21	5.18	1.78	5.05	3.62*	49.46
1885	4.04*	1.06	2.14	5.71	8.01	0.51	3.24	0.09	3.51	1.93	0.89	3.79	34.92
1886	1.13	1.65	4.75	2.01	0.05	0.68	2.10	4.64	7.81	0.92	1.50	0.97	28.21
1887	1.09	2.00	1.27	0.17	3.56	2.24	2.76	1.72	3.26	2.70	0.48	4.97	26.22
1888	2.75	4.66	2.72	3.76	7.74	10.42	.....	.....	.....	.....	.....	.....	32.05
Mean.	4.04	4.54	4.92	3.84	5.45	3.92	4.23	3.04	5.68	4.04	5.10	3.62	42.00

*Interpolated.